

7. The method of inking the whole surface after exposure while dry, and wetting afterwards.

8. The method I have adopted of applying the ink forcibly in the press.

9. The advantage taken of the coagulability of the coating of albumen, which can only be turned to account when working as I do on paper.

10. The superior quality of work insured by glazing the sensitive surface.

11. The unlimited number of transfers which can be made identical in every respect.

12. The astonishing rapidity with which work can be got through.

13. The superiority in the actual quality of the work.

14. The advantage taken of the swelling power of the gelatine in cold water.

In this paper I have, as above stated, adhered to the description of that particular form of my process applicable to the reproduction of maps, plans, and pen and ink sketches.

I hope on some future occasion to enter more generally into my subject, and show what may be done on grain stones towards the production of tints and shades, and also to lay before the Philosophical Institute of Victoria the results of some purely chemical investigations connected with operations of the kind I have been describing.

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ART. XVIII.—*Notes on the Plants collected during Mr. John Macdougall Stuart's recent Expedition into the North-west interior of South Australia.* By DR. FERDINAND MUELLER.

[Read before the Institute, January 9th, 1860.]

HAVING been entrusted by Samuel Chambers, Esq., of Adelaide, the principal promoter of Mr. Stuart's last expedition into the north-west interior of South Australia, with the examination of a small but very interesting collection of plants gathered during that journey, it occurred to me that a few general remarks on the vegetation of the country recently explored might interest this meeting.

The important bearings of the vegetation on the physical character of a country are, I need not state, universally acknowledged; but the elucidation of plants becomes one of double interest, when the country from whence they originated possesses to so full an extent the charms of novelty as the north-west tracts of the colony of South Australia; and in this instance I also felt that, whilst I endeavoured to throw some faint additional light on the nature of the interior lately explored, I was also sharing in the public appreciation which in every way should reward the toils of a traveller who, like Mr. Stuart, has already achieved, with means scanty in the extreme, such great geographical discoveries, and who amidst his cares and privations availed himself of the opportunity of furnishing additional material for our knowledge of the Australian flora.

The collection placed at my disposal adds about sixty species of plants to those obtained during Mr. Babbage's expedition.\* Of these several are perfectly new, and will be a lasting record in botanical science of the exertions made of late in South Australia to reveal a portion of the yet widely unknown interior of this continent.

The nature of the plants before us indicates at once that they belong to a country devoid of high mountains. For although some of the species are identical with those discovered by Capt. Sturt, in 1845, at the Barrier Ranges, and found also by myself in 1851, at the Flinders' and Elder's Ranges, they still belong to the arid vegetation of which also the treeless hills of the southern interior so much participate.

On the other hand, Mr. Stuart's journey has, first of all, shown the occurrence within the South Australian territory of several plants which are known to inhabit the periodically dry stream-beds of tropical Australia, plants which appear as harbingers of the flora of a country much less subject to draught than the southern steppes of this continent. Thus *Dentella repens*, Forst.; *Cleome flava*, Banks; *Mukia scabrella*, Arn.; *Æschynomene Indica*, L.; *Flaveria Australasica*, Hook.; *Cyperus angustatus*, R. Br., are found unexpectedly represented in the more southern latitudes of Australia.

On observing in Mr. Stuart's collection, also, several characteristic plants brought by Mr. A. Gregory from Cooper's Creek, we are led to suppose that a gradually rising

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\* Report on the plants collected during Mr. Babbage's expedition, 1838.

country stretches perhaps as far N. W. as N. E. from Lake Torrens, and that the drainage of this tract, at least in wet seasons, is finding its way into the great depression north of Spencer's Gulf; and, finally, that in all likelihood a path of communication will be opened from thence, in a N. W. direction, through a country traversed by watercourses similar to Cooper's Creek.

If these suppositions, which suggests themselves from the inspection of the plants before us, should be borne out, then also the surmise of the Surveyor-General of this colony may be realised; namely, that the creeks or channels of drainage from N. W., noticed by Mr. Stuart in the remotest parts of the interior explored by him, are perhaps to be regarded as the continuation of Sturt's Creek, left by us in Gregory's expedition towards Central Australia, and which disappeared in a saline desert at the point where we left it in 1856.

Should the identity of these systems of water be hereafter demonstrated, then an overland-route will be open for our South Australian neighbours to the fertile portions of Arnhem's Land, and to the harbors of the N. W. coast of the continent. This hypothesis is certainly favored by the established fact, that the lower part of Sturt's Creek is found sufficiently elevated to admit of a very faint, and therefore easily interrupted, yet in great floods continuous, drainage from Sturt's Creek to the N. W. parts of South Australia.

Returning to the immediate subject of this paper, we observe in the collection neither plants peculiar to the dense brigalow scrubs of Eastern Australia, nor hardly any species approaching to the harsh, often thorny and impenetrable scrub-vegetation of Southern and Western Australia, a fact which augurs well for a traversable country towards Central Australia.

The united botanical collections which we owe now to the zeal of Messrs. Gregory, Babbage, and Stuart, have brought into our possession some material for judging on the numerical relations of the order of plants in the sub-tropical region of the Australian interior. According to the data before us, Compositæ and Leguminosæ prevail over all other families of plants, and probably the former again over the latter. Next to them Salsolaceæ, Grasses (many of nutritious kinds), Malvaceæ and Myoporinæ appear most numerous. That Myrta-ceæ should be scantily represented seems so much more singular, as they are constituting, not only in most other

parts of Australia, a prominent order, but rank also under the same latitudes in Western Australia, according to Mr. Augustus Oldfield's observations, near Shark's Bay, as one of the main tribe of plants. Yet, although their variety of species is unusually small, *Myrtaceæ* still continue to offer, in the ubiquitous *Eucalyptus*, the principal timber, besides which some *Avoniæ* are forming fair-sized timber trees. *Casuarinæ*, and what is still more singular, *Proteaceæ* are not common; *Epacrideæ* entirely absent. *Monocotylidoneæ* bear a scantier proportion to *Discotylidoneæ* than usual. *Acotylidoneæ* seem remarkably scarce. The herbarium shows, besides the novelties enumerated on the following page, several plants evidently as yet unknown in the flora of the globe; but these, I regret to say, not collected in a sufficiently perfect state to admit of their introduction into the botanical system. We may take them as a proof of how much additional labor is still needed before a system of the plants of this continent will have advanced to completion, and let us ardently hope that the intrepid traveller to whom we owe this contribution to phyto-logy, will safely and successfully return from his present arduous exploits, and also add again to our knowledge of the treasures of the vegetable empire.

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*Enumeration of the Plants observed for the first time during  
Mr. Macdougall Stuart's expedition in the north-western  
interior of South Australia:—*

- Cleome* (*Polanisia*) *flava*, Banks in D. C. prodr., I., 241.  
*Busbeckea Mitchelli*, F. M. Plants indig. to Victoria, I.,  
 53, Suppl. pl. iv.  
*Tribulus cistoides*, L. sp. 554.  
*Sturtia gossypoides*, R. Br. Append. to Sturt's Central  
 Austr., II., p. 68.  
*Hibiscus hakeifolius*, Giard. Mem. di una Nuova Specie  
 d'Ibisco, 1833.  
*Hibiscus brachysiphonius*, F. M. Fragm. Phytogr. Austr.,  
 I., 67.  
*Sida diplotricha*, F.M., in Linnæa 1852, 380.  
*Hymenotheca pyramidalis*, F. M. Fragm. Phytograph.  
 Austr., I., 282.  
*Ammannia multiflora*, Roxb. Flor. Indica. I., 447.

- Trianthema crystallina*, Vahl Symb., I., 32.  
*Zehneria scabrella*, F. M. (*Mukia scabrella*, Arn. in Hook. Journ. Bot., III., 276).  
*Euphorbia Chamæsyce*, L. sp. pl. 652.  
*Loranthus nutans*, A. Cunn. in Mitch. Trop. Austr., 158.  
*Acacia pendula*, A. Cunn. in Don Gen. Syst. Dichl. Plants, I., 404.  
*Cassia heteroloba*, Lindl. in Mitch. Three Expeditions—vol. II., 122.  
*Petalogyne labicheoides*, F. M. in Hook. Kew Miscell. 1856, 325.  
*Templetonia retusa*, R. Br. in Ait. Hort. Kew, ed. II., v. IV., 269.  
*Indigofera casiantha*, F. M. Enum. of Plants coll. by Mr. Gregory in Sub-central Austral., p. 6.  
*Æschynomene Indica*, L. spec., 1061.  
*Swainsona campylantha*, F. M. Enum. of Plants coll. by Mr. Gregory in Sub-central Austr., 6.  
*Didiscus glaucifolius*, F. M. in Linnæa 1852, 395.  
*Sphæromorphæa petiolaris*, D. C. prodr., VI., 140.  
*Senecio magnificus*, F. M. in Linnæa 1852, 418.  
*Ixiochlamys cuneifolia*, Sond. and Muell. in Linnæa 1852, 461.  
*Flaveria Australasica*, Hook. in Mitch. Trop. Austral., 118.  
*Pachysurus multiflorus*, Turcz. in Bullet. Soc. Natur. Moscow, xxiii., 29.  
*Eurybia Stuartii*, F. M. Frag. Phytogr. Austr., I., 208.  
*Eurybia Muelleri*, Sond. in Linnæa 1852, 459.  
*Dentella repens*, Forst. gen. p. 26., tab. 13. (*Lippaya teliphoides* End. Atakta, 8.)  
*Isotoma petraea*, F. M. in Linnæa 1852, 420.  
*Goodenia Nicholsonii*, F. M. Fragm. Phytogr. Austr. I., 209.  
*Goodenia Chambersii*, F. M. Fragm. Phytogr. Austr. I., 210.  
*Myoporum parvifolium*, R. Br. prodr., 516.  
*Eremophila rotundifolia*, F. M. Fragm. Phytogr. Austr., I., 210.  
*Eremophila divaricata*, F. M. in Papers of Roy. Soc. Tasm., 1859, 293.  
*Solanum discolor*, R. Br. prodr. 445.  
*Solanum petrophilum*, F. M. in Linnæa 1852, p. 433.  
*Samolus litoralis*, R. Br. pr. 428.  
*Santalum lanceolatum*, R. Br. pr. 356.  
*Kentropsis lanata*, Moquin Chenope. num., p. 83.  
*Xerotis dura*, F. M. in Linnæa 1856, 219.

- Typha Shuttleworthii, Koch and Sonder in Synops. Flor. Germ. et Helv., II., 786.  
 Juncus maritimus, Lam. Encycl. Bot., III., 264.  
 Cyperus angustatus, R. Br. prodr., 214.  
 Cyperus rotundus, L. Syst. Veg., 98.  
 Panicum villosum, R. Br. pr., 192.
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ART. XIX.—*Notes of a recent personal visit to the unoccupied Northern District of Queensland.* By WILLIAM LOCKHART MORTON, Esq., with a Map of the District.

[Read before the Institute, January 23, 1860.]

I HAVE the honor to lay before the Institute, this evening, a few particulars respecting the extreme northern limits of civilisation in Australia, and in reference to a considerable extent of unoccupied country to the north and west of those limits.

I propose to confine my remarks to the climate, to the geographical features, and the geological character of the country I travelled over, and to its capabilities as an agricultural and pastoral settlement; concluding with some general remarks explaining how few facilities are granted for actual settlement.

Landing at Rockhampton, on the Fitzroy River, I went, in company with two other persons, first northerly, parallel to the coast, to within a few miles of Mount Funnel. Afterwards, travelling westerly from Broad Sound, I crossed the River Isaacs, and traced up the Mackenzie for about one hundred miles.

For the sake of distinctness, I propose to begin with the River Fitzroy.

This river, which is formed, as you are all aware, by the confluence of the two large rivers, the Isaacs and Mackenzie, was first discovered by Dr. Leichhardt, empties itself through several channels into Keppel Bay. This bay at one time doubtless extended thirty miles further west, or as far inland as the site of Rockhampton, but it has apparently been gradually filled up by the debris of the river; a process which is